

## Evaluation of Some Local Greek Yellow Sweet Cherry Cultivars

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### Abstract

The trees of the yellow sweet cherry (*Prunus avium* L.) cultivars in the experimental orchard were, grafted on cherry seedling rootstock (Mazzard) and trained as a typical vase shape planted at distances 6 x 6 m apart. The studied cultivars showed a wide range of the following characteristics; beginning of harvest: 23 May till 15 June, productivity: 30-115 kg per tree, mean fruit weight: 4.9-8.8 g, mean fruit length: 20.3-23.5 mm, mean fruit width: 20.0-25.0 mm, total soluble solids: 16.3-21.1°Brix, stone weight: 0.19-0.65 g, ratio of stone: fruit weight 1:8.8-1:26.2, length of leaf blade:10.6-12.8 cm, and width of leaf blade:4.75-6.05 cm. The studied cultivars may have a potential for breeding purposes in the future due to their characteristics.

### INTRODUCTION

The market demands mainly dark-red cherries. However, a small percentage of consumers prefer yellow sweet cherries that are suitable for processing. Several yellow cherry breeding programs were continued for many years in several countries (Gozob et al., 1985; Schmidt, 1998; Chatzicharissis et al., 2009). The main breeding characteristics of yellow sweet cherries are the resistance to browning, big size, resistance to cracking, high content of dry matter etc. The aim of this research was to evaluate several local yellow sweet cherry cultivars under the soil climatic conditions of northern Greece and compare them with the cultivar 'Rainier'.

### MATERIALS AND METHODS

The experimental trees of the cultivars 'Late Karamela Tripoleos', 'Fraoula Volou', 'Kifisias proimotero', 'Petrokeraso Tragano Achaias', 'Moshato Tragano Opsimo Evoias', 'Kapsiotika', 'Napoleon Karamela', 'Karamela Lilantiou' were grafted on a cherry seedling rootstock (Mazzard) (*Prunus avium* L.), trained in a typical vase form and planted at a distance of 6x6 m apart (Naoussa, northern Greece, longitude 22°12'0"E; latitude 40°29'04"N; elevation 225m). The previous mentioned cultivars were compared with the well-known cultivar 'Rainier'. Productivity data of 10 years reported are means of 9 trees (3 replications x 3 trees) per cultivar (means were based on data collected from when the trees were 5 years old to when they were 15 years of age). The following measurements were performed in fruits: fruit length, width, thickness, peduncle length, as well as fruit weight, productivity, stone weight and stone/fruit ratio. Total soluble solids were measured with the Atago PR-1 electronic refractometer (Atago Co. Ltd., Tokyo). All fruit characteristics reported were based on a random sample of 200 fruits selected from the experimental trees in each year. Furthermore, leaf (blade and petiole) as well as stone dimensions were measured. Differences between means were evaluated by using the Duncan's multiple range test at  $P < 0.05$ .

### RESULTS AND DISCUSSION

'Late Karamela Tripoleos' cultivar showed the highest productivity, followed by 'Rainier' (Table 1). The rest cultivars had lower productivity whereas 'Kapsiotika' showed the lowest. 'Rainier' had the highest fruit weight among the studied cultivars. 'Fraoula Volou', 'Kifisias proimotero', and 'Petrokeraso Tragano Achaias' showed higher

fruit weight than 'Kapsiotika', 'Napoleon Karamela' and 'Karamela Lilantiou'. In general, the local Greek cultivars studied had low fruit weight. Highest total soluble solids content was recorded in 'Kapsiotika' and 'Rainier', whereas lowest in 'Kifisias proimotero', and 'Napoleon Karamela'. 'Kapsiotika' had the highest fruit peduncle. Higher fruit length was measured in 'Fraoula Volou', whereas fruit thickness and width in 'Rainier' compared to the other cultivars (Table 1).

The studied cultivars showed variability in leaf dimensions as shown in Table 2. Stone weight was lowest in 'Late Karamela Tripoleos' compared to the other cultivars. The studied cultivars showed variability in stone dimensions as shown in Table 3. Lower stone/fruit weight ratio was recorded in 'Late Karamela Tripoleos' and 'Rainier' compared to the other cultivars (Table 3). Ripening dates of the studied cultivars varied from May 23-June 3 for 'Moshato Tragano Opsimo Evoias', till June 5-June 15 for 'Fraoula Volou' indicating an extended harvest period (Fig. 1).

In conclusion, the paper reports data on local Greek yellow sweet cherry cultivars that may not be used as commercial cultivars directly since they were not subjected to breeding. However, they may have a potential for breeding purposes in the future such as 'Late Karamela Tripoleos' that showed low stone weight, 'Kapsiotika' that showed high total soluble solids content, 'Moshato Tragano Opsimo Evoias' for early ripening, 'Fraoula Volou' for late ripening characteristics etc.

### **Literature Cited**

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## Tables

Table 1. Productivity and fruit characteristics of the studied cultivars (means of 10 years).

Cultivar	Fruit length (mm)	Fruit width (mm)	Fruit thickness (mm)	Fruit weight (g)	Productivity (kg/tree)	Total soluble solids (°Brix)	Peduncle (cm)
Fraoula Volou	23.5 a <sup>x</sup>	23.0 b	20.0 b	7.3 b	80 c	19.1 b	4.0 c
Late Karamela Tripoleos	21.0 b	20.0 c	18.0 c	4.9 d	115 a	18.7 bc	4.5 b
Napoleon Karamela	21.6 b	22.3 b	19.2 b	5.7 c	35 de	16.3 d	4.6 b
Karamela Lilantiou	21.0 b	21.6 c	18.5 c	5.9 c	40 d	17.0 cd	4.5 b
Kapsiotika	22.8 ab	20.9 c	18.1 c	5.8 c	30 e	21.1 a	5.4 a
Kifisias Proimotero	21.6 b	24.4 ab	20.1 b	7.1 b	35 de	16.4 d	4.7 b
Petrokeraso Tragano Achaias	21.6 b	22.2 b	19.1 b	6.9 b	40 d	18.1 c	4.8 b
Moshato Tragano Opsimo Evoias	20.3 c	20.7 c	17.3 d	5.1 bc	35 de	19.7 b	4.6 b
Rainier	22.0 b	25.0 a	21.5 a	8.8 a	99 b	20.6 ab	4.5 b

<sup>x</sup> Means followed by the same letter in the same column are not significantly different (Duncan's Multiple Range Test,  $P \leq 0.05$ ).

Table 2. Leaf characteristics of the studied cultivars (means of 10 years).

Cultivar	Length of blade (cm)	Width of blade (cm)	Ratio of blade length/width	Length of petiole (cm)	Width of petiole (cm)	Number of nectaries per leaf
Fraoula Volou	12.4 a <sup>x</sup>	5.46 ab	1/0.44 a	3.96 b	0.14 ab	2 a
Late Karamela Tripoleos	11.9 ab	5.57 ab	1/0.48 a	3.89 c	0.15 ab	2 a
Napoleon Karamela	12.6 a	5.69 a	1/0.45 a	3.99 b	0.15 ab	2 a
Karamela Lilantiou	12.8 a	5.96 a	1/0.47 a	4.01 b	0.14 ab	2 a
Kapsiotika	12.0 ab	6.05 a	1/0.50 ab	5.29 a	0.14 ab	2 a
Kifisias Proimotero	10.6 b	4.75 b	1/0.45 a	3.93 b	0.11 b	2 a
Petrokeraso Tragano Achaias	12.5 a	5.62 a	1/0.44 a	4.04 b	0.16 a	2 a
Moshato Tragano Opsimo Evoias	10.7 b	5.76 a	1/0.54 b	3.95 b	0.12 b	1 b
Rainier	11.7 ab	5.96 a	1/0.51 ab	2.72 d	0.18 a	2 a

<sup>x</sup> Means followed by the same letter in the same column are not significantly different (Duncan's Multiple Range Test,  $P \leq 0.05$ ).

Table 3. Stone characteristics of the studied cultivars (means of 10 years).

Cultivar	Stone length (mm)	Stone width (mm)	Stone thickness (mm)	Stone weight (g)	Ratio of stone/fruit weight
Fraoula Volou	11.4 ab <sup>x</sup>	8.5 b	6.8 b	0.34 c	1/21.5 c
Late Karamela Tripoleos	11.0 b	8.0 b	6.0 bc	0.19 d	1/26.2 d
Napoleon Karamela	12.4 a	8.7 a b	6.9 b	0.65 a	1/8.8 a
Karamela Lilantiou	12.4 a	8.9 a b	7.0 ab	0.65 a	1/9.1 a
Kapsiotika	11.9 ab	8.9 a b	6.6 b	0.46 b	1/12.6 b
Kifisias Proimotero	11.9 ab	8.9 ab	6.8 b	0.50 b	1/14.2 b
Petrokeraso Tragano Achaias	11.9 ab	8.5 b	6.8 b	0.50 b	1/13.8 b
Moshato Tragano Opsimo Evoias	10.8 b	7.9 b	6.3 b	0.39 c	1/13.1 b
Rainier	10.0 bc	9.5 a	8.0 a	0.34 c	1/25.6 d

<sup>x</sup> Means followed by the same letter in the same column are not significantly different (Duncan's Multiple Range Test.  $P \leq 0.05$ ).

## Figures

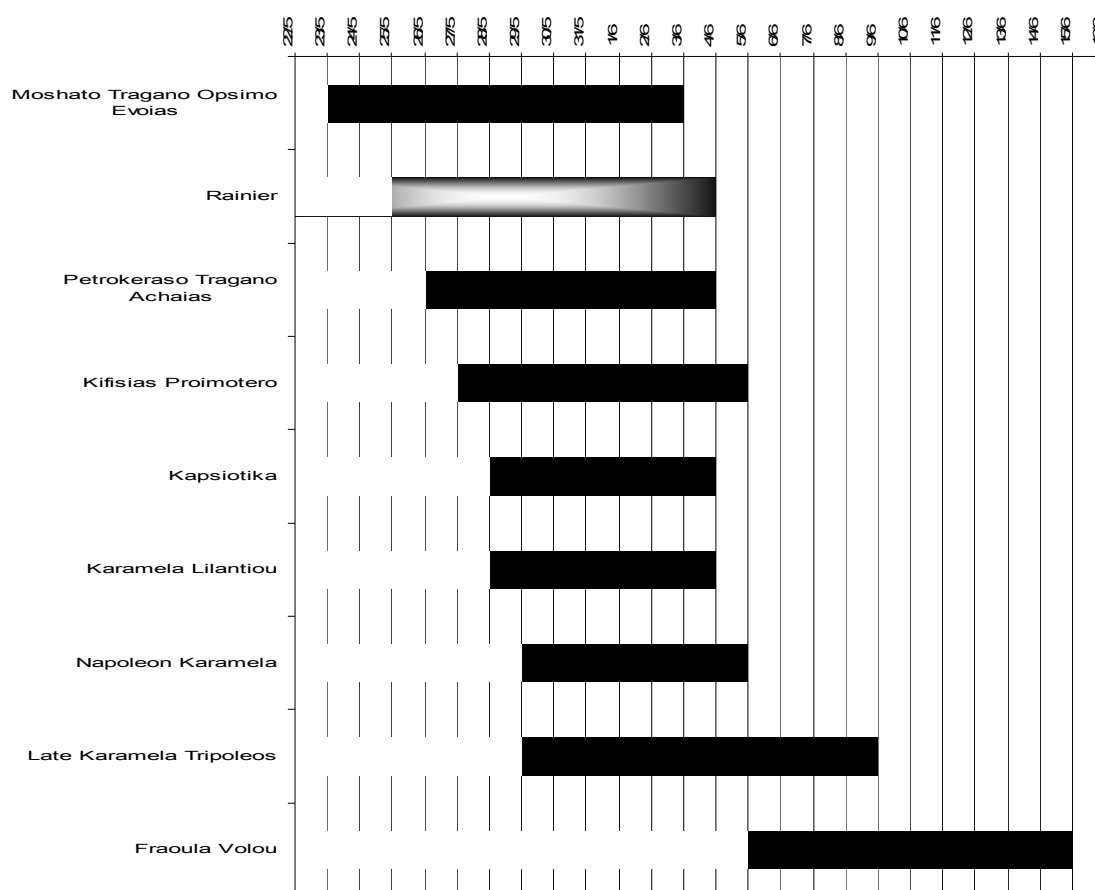


Fig. 1. The range of ripening dates of the studied cultivars (means of 10 years).